

### **REMARKS/ARGUMENTS**

All the independent claims 1, 11,, 12, 13, 17, 22, 30, and 32 have been amended to describe the method as using a computer processor in variously manipulating input waveform signals and in independent claims 11, 12, 13, 17, 22, 30, and 32, to describe the method as including at least one step. Claim 11 has also been amended to remove the antecedent lacking "the" from the phrase "the non-ideal interpolation." Claim 12 has also been amended to remove the phrase "optionally using accumulated spectrally weighted distortion", which has been added as a limitation to new claim 35 dependent from claim 12. Claim 17 has also been amended to remove the phrase "optionally some weight associated with their probability", which has been added as a limitation to claim 34 dependent from claim 17. Claim 22 has been amended to delete reference to a system, has also been amended to remove the phrase "optionally using temporal weighting", which has been added as a limitation to claim 23, dependent from claim 22, and to remove the phrase "optionally using a switch predictive synthesis filter or predictor", which has been added as a limitation to new claim 36 dependent from claim 22. Claim 25 has been amended to remove the phrase "or other relevant measure". Claims 28 and 29 have been amended to refer to a "plurality of shapes", rather than a "set" as in the original claims and the dependency of claim 29 has been corrected.

The rejection of all the claims under 35 U.S.C. § 101 as being directed to non-statutory subject matter, and under 35 U.S.C. § 112, second paragraph, as being indefinite, are both respectfully traversed and believed obviated by the foregoing amendments in which the method is described as using a computer processor in variously manipulating input waveform signals. The Examiner is thanked for the several suggestions in this regard.

The rejection of all claims 11 – 33 under 35 U.S.C. § 112, second paragraph, as being incomplete is respectively traversed and believed obviated by the amendment specifying specific steps.

The rejection of all claims 22 – 28 under 35 U.S.C. § 112, second paragraph, as being indefinite is respectively traversed and believed obviated by the amendment deleting reference to a system in claim 22.

The further rejection of claims 28 and 29 under 35 U.S.C. § 112, second paragraph is respectively traversed and believed obviated by the amendment to refer to a “plurality of shapes”, rather than a “set” as in the original claims and the correction of the dependency of claim 29.

The further rejection of claims 11 as lacking antecedent basis is respectively traversed and believed obviated by the amendment removing the antecedent lacking “the” from the phrase “the non-ideal interpolation.”

The rejection of all the claims under 35 U.S.C. § 102(b) as being anticipated by Kleijn (5,517,595) is respectfully traversed. Kleijn does not teach or suggest any claimed embodiments, as will be discussed below. The instant AbS is between a sequence of input waveforms to sequence of quantized and interpolated waveforms, rather than between only one input to one output waveform (per frame) as in Kleijn. The AbS of the claims takes into considerations the effect of interpolating the waveforms, unlike Kleijn. The AbS of the claims is different from Kleijn’s AbS.

In addition, the waveform is shifted in order to eliminate the linear phase shift between the quantizer input to its output, which helps to eliminate the linear shift and to focus on the dispersion phase. In Kleijn, the shift is done in a different context for a completely different purpose, which is smoothing the characteristic waveform, and no phase quantization method or system is described in Kleijn, and no focus on the dispersion phase is suggested there.

Further novelty is found in the varying boundaries of the summations, in computing the distortion measure or an equivalent similarity measure, such as normalized correlation, used for the pitch search. These varying boundaries are those used for the summations used in the computation of the similarity (or distortion) measure, while the boundaries mentioned in Kleijn are the extracted waveform’s boundaries, a totally different subject and context.

Moreover, Kleijn suggests quantizing the SEW on a gain-shape product VQ, i.e. gain-shape-VQ applied to one SEW vector. Here we apply VQ to the gain sequence. These are two different subjects and context. Also, Kleijn doesn’t perform Vector-Quantization of the gain (instead he uses down sampling and scalar quantizer), whereas relevant claims refer to Vector-Quantization of the gain using

AbS and switch prediction. Kleijn doesn't use any temporal weighting nor does he use analysis-by-synthesis or switch prediction for the gain quantization.

Present relevant claims are novel in using accumulated distortion for the quantization, not distortion between one input to one output vector.

Indexes 0-to-K in Kleijn refer to the level of voicing, periodicity, or the peakiness of the SEW waveform, and not to a full quantization of the phase which may produce changing phase even when the level of voicing is unchanged. Kleijn mentions the possibility of phase spectra quantization and doesn't provide any method or system to do it. The method of this invention focuses specifically on the dispersion phase attribute of the phase, and provides a method and a system to extract and to quantize the dispersion phase.

In view of the foregoing, Applicants believe the application is in condition for allowance and respectfully solicit a Notice of Allowance.

The Commissioner is hereby authorized to charge payment of any fees required associated with this communication or credit any overpayment to Deposit Account No. 50-0337. If an extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. 50-0337. A duplicate copy of this paper is enclosed.

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Respectfully submitted,

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